AF

Docket 86263PAL
Customer No. 01333

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of

Delaina A. Allen, et al

PIGMENTED INKS FORMED USING MICROFILTRATION

Serial No. 10/748,888

Filed December 30, 2003

Group Art Unit: 1755

Examiner: Veronica F. Faison

I hereby certify that this correspondence is being deposited today with the United States Postal Service as first class mail in an envelope addressed to Commissioner For Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Robin G. DePoint

Robin G. DePoint

December 2, 2005

Date

Mail Stop APPEAL BRIEF-PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA. 22313-1450

Sir:

APPEAL BRIEF TRANSMITTAL

Enclosed herewith is Appellants' Appeal Brief for the above-identified application.

The Commissioner is hereby authorized to charge the Appeal Brief filing fee to Eastman Kodak Company Deposit Account 05-0225. A duplicate copy of this letter is enclosed.

Respectfully submitted,

Paul A. Leipold/rgd
Telephone: 585-722-5023
Facsimile: 585-477-1148

Attorney for Appellants
Registration No. 26,664

Enclosures

If the Examiner is unable to reach the Applicant(s) Attorney at the telephone number provided, the Examiner is requested to communicate with Eastman Kodak Company Patent Operations at (585) 477-4656.

Docket 86263PAL
Customer No. 01333

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of

Delaina A. Allen, et al

PIGMENTED INKS FORMED USING MICROFILTRATION

Serial No. 10/748,888

Filed 30 December 2003

Group Art Unit: 1755

Examiner: Veronica F. Faison

I hereby certify that this correspondence is being deposited today with the United States Postal Service as first class mail in an envelope addressed to Commissioner For Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Robin G. DePoint

Robin G. DePoint

December 2, 2005

Date

Mail Stop APPEAL BRIEF-PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA. 22313-1450

Sir:

APPEAL BRIEF PURSUANT TO 37 C.F.R. 41.37 and 35 U.S.C. 134

Table Of Contents

APPELLANT'S BRIEF ON APPEAL

Appellants hereby appeal to the Board of Patent Appeals and Interferences from the Examiner's Final Rejection of claims 1-20 which was contained in the Office Action mailed June 3, 2005.

A timely Notice of Appeal was filed October 3, 2005.

Real Party In Interest

As indicated above in the caption of the Brief, Eastman Kodak Company is the real party in interest.

Related Appeals And Interferences

No appeals or interferences are known which will directly affect or be directly affected by or have bearing on the Board's decision in the pending appeal.

Status Of The Claims

Appendix I provides a clean, double spaced copy of the claims on appeal.

Status Of Amendments

There were no Amendments after Final in this application. A Response after Final was filed September 2, 2005.

Summary of Claimed Subject Matter

The invention relates to the pigmented tanks for inkjet printing, page 4 lines 6-9 of the specification. Most inks for inkjet printing contain inks rather than pigments because of problems with pigments plugging inkjets after a short time of operation, page 2 lines 12-19. The invention solves the problem by a test to determine when a pigmented inkjet ink is suitable for the printing of a large number of pages before failure, page 4 line 25 – page 5 line 3.

The test comprises separating a sample of the pigment-based ink into four equal 100 ml parts. The Samples are then passed in turn through an inert membrane having a porosity of 10 micrometer and a diameter of 47 mm using a vacuum of 20 inches mercury. The time it takes to filter the first sample and the

fourth sample is measured. The time taken for the first sample is divided by the time taken to filter the first sample. This time is multiplied by 100 to obtain "filterability ". In the invention it is found that filterability of at least 80% is the indication of a pigmented ink that will perform for long periods of time in an inkjet printer, page 3 line 23 – page 4 line 3 and page 5 line 29 – page 6 line 3. The examples, particularly as illustrated in Table 1, demonstrate that the "filterability" measurement of the invention is an excellent measure of future good performance for pigmented inkjet inks, page 28 line 29 – page 34 line 30, particularly pages 33 and 34.

Grounds of Rejection to be Reviewed on Appeal

The following issues are presented for review by the Board of Patent Appeals and Interferences:

1. Whether claims 1-20 are unpatentable under 35 USC 102 over Yu et al (U.S. 6,464,943).

2. Whether claims 1-20 are unpatentable under 35 USC 103 over Yu et al (U.S. 6,464,943).

Arguments

In the Final Rejection of June 3, 2005 the Examiner states the rejection over Yu et al. as follows:

> Claims 1-20 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, 35 U.S.C. 103(a) as being unpatentable over Yu et al (US Patent 6,494,943).
>
> Yu et al teach a colored pigment having one or more parameters and/or properties such as a particle size of from about 10 nm to about 300 nm and a filterability such that when in a liquid medium, 100 ml having 10% solids of the colored pigment filters trough a 3 micron nylon absolute filter (abstract and col. 3 lines 6-25). The pigments that traditionally used in ink compositions including blue, cyan, green, violet magenta pigments such as

carbon blacks, phthalocyanine, Pigment Blue 15, Pigment Red 122, Pigment Yellow 74 and Pigment Yellow 128 (col. 3 line 30+) may be used in the composition. The reference states that pigment traditionally used in ink composition may be present in the composition which would also include organic crystalline pigments absence evidence to the contrary. The particle size of the colored pigments, the particle size of the distribution is based on the mean volume diameter of the pigment particles as measured by the dynamic light scattering method. The particle size distribution range of the colored pigments is from about 10 nm to about 300 nm (col. 4 lines 16-24). The reference further teaches that the colored pigment may be present in the amount of less than or equal to 20 to 25 percent by weight when used in an ink jet ink composition (col. 15 lines 28-30 and col. 16 lines 59-62). In addition, the colored pigment is typically as small as possible to enable a stable colloidal suspension of the pigment in the liquid vehicle and to prevent clogging of the ink channels and nozzles (col. 16 lines 62-65). Additives which are suitable for use in ink or ink jet composition to impart a number of desired properties while maintaining the stability of the composition including surfactants, polymers, humectants, biocides, binders and penetrants may be present the in the amount of 0 to 40 percent by weight (col. 15 lines 36-54). Humectants present in the ink composition include ethylene glycol, diethylene glycol, ethers, ethers derivative and 2-pyrrolidone (col. 15 lines 43-67). The reference further teaches that the ink composition may be aqueous based wherein water is present in the amount of about 50 to about 95 percent by weight (col. 17 lines 7-12). The ink composition may be used ink an ink jet printer, wherein a printhead is used and because the ink composition appears to have the same filterability of the claimed invention it would obviously have a printhead having an orifice size of 25 micrometers for greater than 10 hours. The reference fails to teach the specific steps to calculate the ink composition's filterability. The composition as taught by Yu et al appears to anticipate the claimed invention when the filterability is measured by the same standards that the ink composition of Yu et al would

inherently exhibit Applicant's claimed properties in absence evidence to the contrary.

This rejection is traversed for the reasons below.

Although Yu et al. discloses a pigmented inkjet ink, Yu et al. fails to teach all the limitations of the claimed invention. In column 4, lines 37-39 of Yu et al. it is stated that the dispersion completely filters through a 1 to 2 micron nylon absolute filter. In column 3, lines 19-21 of Yu et al. it is indicated that the material has 10% solids of the colored pigment and passes through a 3.0 micron nylon absolute filter. In contrast, the material of the instant invention after four passes of the ink through a 1.0 micron filter still has 80 percent filterability. This is a much more rigorous test that that disclosed in Yu et al. In column 4, lines 16-24 of Yu et al. the range of particles in the ink is from 10 to 300 nm. However, those skilled in the art understand that there are always particles present in the ink outside this range. In fact the data disclosed in column 26, table 4 of Yu et al. clearly shows that pigments 5.1-5.3 contain a substantial number of pigment particles greater than 0.5 and 1.0 microns, this is outside the range of 10 to 300 nm. Furthermore, because all of the examples disclosed in Yu et al. were generated by similar means all of the pigments would have similar oversize particle counts. One skilled in the art would understand that the majority of particles are within the range of 10 to 300 nm. However, the presence of the relatively larger particles is a problem when firing inks from a small diameter nozzle in an inkjet head, and results in plugging filters. This greatly affects the reliability of the printing. The present invention is useful for jetting ink for multiple hours and printing hundreds of pages without failure. Yu et al. discloses printing on paper however, fails to mention printing multiple sheets, especially the number of sheets as disclosed by the present application's examples. The requirement for the inks taught by Yu et al. is that they pass through a 3.0 micron absolute filter. The 3.0 micron filters are sufficiently large enough to allow 1.0 and 1.5 micron particles to pass though the filter without plugging. The Appellants respectfully direct the Board's attention to the comparative inks of the

instant application, CC-2 through CC-4, CY-2 through CY-4, CM-1 through CM-3 and CK-1. Each of these inks have been filtered through a 1.0 micron filter and then degassed and filtered through a 1.2 micron filter. This ink treatment is at least as effective as the single 3.0 micron filtration step disclosed by Yu et al. to remove particles in the 1.0 micron range. However, these inks fail the filtration and jetting test as shown on pages 33-34. Table 1 of the present application. These examples provide clear evidence that the inks disclosed by Yu et al. are not inherently the same as the instant invention. The inks of the instant invention, that meet the measurements of claim 1, are unexpected in performance as shown by the examples. The inks disclosed in column 26, Table 4 of Yu et al. have at least 7,700,000 particles greater than 1.0 micron per ml of ink. The filtration test of the instant invention states that 100 ml of ink was passed through a 1.0 micron filter. There would be a tremendous number of particles in the inks taught by Yu et al. that would contribute to the plugging of the 1.0 micron filter, thus failing the test as shown by the comparative examples in the instant application. It is respectfully urged that the inks taught by Yu et al. do not anticipate, teach or suggest the inks of the instant invention. Therefore, it is respectfully requested that this rejection be reviewed by the Board.

Examiner's response to Applicants arguments

In the Advisory Action of September 19, 2005 the Examiner stated as follows:

> The request for reconsideration has been considered but does not place the application in condition for allowance because: It is the position of the Examiner that the composition as taught by Yu et al meets the limitations of claims particularly when the dispersion completely filter through a 1 to 2 micron nylon absolute filter and the preferred particle size is about 50 nm to 100 nm which meets Applicant limitation of less than 0.1 micrometers.

As argued above, Yu does not disclose filtering to test for suitability for ink jet use. Further, the ink of Yu would not pass the test of the instant claims. The requirements of Yu are passing through a 3 micrometer filter whereas the instant test uses a filter with a porosity of 1 micrometer. Further as pointed out above the pigments of Yu, as shown at coluum 26, pigments 5.1-5.3 have a large number of large particles. Therefore, the invention is not inherent and there is no teaching to filter further to remove the large particles.

Claims 9, 10 and 16 are separately patentable from claim 1

All claims do not stand or fall together. Claims 8, 9, and 16 are separately patentable.

Claims 9 and 10 set forth a particle size of the pigment particles of the invention of less than or equal to 0.3 (claim 9) or 0.1 micrometers (claim 10). This particle size is not disclosed or suggested by Yu et al. Yu has a wide range of particles, but does not suggest selecting a mean particle size such as in these claims. This particle size range is smaller than the particle range specified in Yu et al. Further, there is no disclosure suggestion to select the mean particle size ranges of claims 9 and 10 in order to achieve long inkjet printing without clogging filters or heads of the printer. Therefore, these claims are separately patentable. It is respectfully requested that the rejection of claims 9 and 10 be reversed.

Claim 16 sets forth an orifice size of 25 micrometers and a time of operation of greater than 10 hours that the claimed ink will continuously print. This is a difficult standard as is apparent from Table 1 of the instant specification. Yu et al does not indicate concern about life or reliability of the ink. It is not an inherent property that the Yu inks meet this test. The Yu inks do not eliminate most large particles and therefore could not meet the reliability test of claim 16. Therefore, it is respectfully requested that the rejection of claim 16 be reversed.

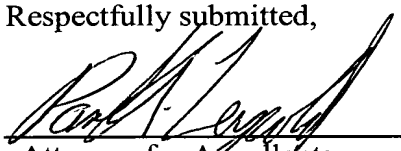
Summary

Yu does not anticipate or make obvious the ink of the instant invention. The ink of the instant invention clearly does not contain a significant number of large particles. As shown by the Examples of Yu the prior art inks contain large particles in large numbers. These inks would not inherently correspond to the instantly claimed inks due to the large particles present. The invention is not obvious over Yu as there is no teaching to remove the large particles to provide reliability, much less to make an ink to pass the rigorous claim test. Therefore reversal of the rejection is respectfully requested.

Conclusion

For the above reasons, Appellants respectfully request that the Board of Patent Appeals and Interferences reverse the rejection by the Examiner and mandate the allowance of claims 1-20.

Respectfully submitted,



Paul A. Leipold/rgd
Telephone: 585-722-5023
Facsimile: 585-477-1148

Attorney for Appellants
Registration No. 26,664

Enclosures

If the Examiner is unable to reach the Applicant(s) Attorney at the telephone number provided, the Examiner is requested to communicate with Eastman Kodak Company Patent Operations at (585) 477-4656.

Appendix I - Claims on Appeal

1. A pigment-based ink composition for inkjet printing the ink composition comprising pigment particles, wherein said ink composition has a filterability of at least 80% wherein filterability is determined by the following test; a sample of said pigment-based ink is divided into four 100 ml aliquots and a first aliquot is filtered through a chemically inert membrane having a porosity of 1.0 μm and a diameter of 47 mm and using a vacuum of 20 inches of Hg and measuring the time it takes to complete the filtration, T1, a second and third aliquot are sequentially passed through the same filter under the same filtering conditions, the fourth aliquot is then passed through the same filter under the same conditions while measuring the time it takes to complete the filtration of the fourth aliquot, T4, the time of T1 is divided by T4 and multiplied by 100 to obtain the filterability.

2. The pigment-based ink of claim 1 wherein said filterability is greater than 90%.

3. The pigment-based ink of claim 1 wherein said ink comprises a glycol ether at a concentration of between 2.5 and 7.5 wt%.

4. The pigment-based ink of claim 1 wherein the pigment particles comprise yellow pigment.

5. The pigment-based ink composition of claim 1 wherein the pigment particles comprise magenta pigment.

6. The pigment-based ink composition of claim 1 wherein said pigment particles comprise organic crystalline pigments.

7. The pigment-based ink composition of claim 1 wherein the pigment particles comprise cyan pigment.

8. The pigment-based ink composition of claim 1 wherein the pigment particles comprise black pigment.

9. The pigment-based ink composition of claim 1 wherein the mean particle size of said pigment particles is less than or equal to 0.3 micrometers.

10. The pigment-based ink composition of claim 1 wherein the mean particle size of said pigment particles is less than or equal to 0.1 micrometers.

11. The pigment-based ink composition of claim 1 wherein said ink composition further comprises water.

12. The pigment-based ink composition of claim 1 wherein said pigment particles comprise Pigment Yellow 155, Pigment Yellow 74, Pigment Yellow 180, Pigment Yellow 150, Pigment Yellow 97, or Pigment Yellow 128.

13. The pigment-based ink composition of claim 1 wherein said pigment particles comprise Pigment Red 122.

14. The pigment-based ink composition of claim 1 wherein said pigment particles comprise Pigment Blue 15:3 or Pigment Blue 15:4.

15. The pigment-based ink composition of claim 1 wherein said pigment particles comprise Pigment Black 7 or carbon black.

16. The pigment-based ink composition of claim 1 wherein said ink composition jets through a printhead having an orifice size of 25 micrometers for greater than 10 hours.

17. The pigment-based ink composition of claim 1 wherein said pigment particles comprise a bridged aluminum phthalocyanine pigment.

18. The pigment-based ink of claim 1 wherein said ink further comprises a water-dispersible polymer.

19. The pigment-based ink of claim 17 wherein said water-based polymer is present in an amount from between 0.5% and 5 % by weight of said ink.

20. The pigment-based ink of claim 11 wherein said pigment is present in an amount of between 0.5% and 6 % by weight of said ink.